



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,278	11/18/2003	Nace Layadi	LAYADI 36-39	6063
47396	7590	06/09/2005	EXAMINER	
HITT GAINES, PC AGERE SYSTEMS INC. PO BOX 832570 RICHARDSON, TX 75083			WILSON, CHRISTIAN D	
			ART UNIT	PAPER NUMBER
			2891	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,278

Applicant(s)

LAYADI ET AL.

Examiner

Christian Wilson

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11182003</u> . | 6) <input checked="" type="checkbox"/> Other: <u>search history</u> . |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 – 7, 9 – 16, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Witek *et al.*

Witek *et al.* (US 6,146,970) discloses a method of manufacturing a trench isolation structure comprising the steps of forming a polysilicon hardmask **206** over a substrate **202**, etching a trench **210** in the substrate, and filling the trench with an insulative material **216a**.

Regarding claims 2 and 3, Witek *et al.* further discloses a pad oxide **204** with a thickness of 5 to 25 nm [column 6, line 16].

Regarding claims 4 and 5, Witek *et al.* further discloses a liner oxide **212** with a thickness of 10 to 50 nm [column 7, line 6].

Regarding claim 6, Witek *et al.* further discloses depositing the insulative material within the trench [Figure 8].

Regarding claim 7, Witek *et al.* further discloses a polysilicon hardmask with a thickness of 80 to 200 nm [column 6, line 22].

Regarding claim 9, Witek *et al.* further discloses a trench isolation structure [Figure 9].

Art Unit: 2891

Regarding claim 10, Witek *et al.* discloses a method of manufacturing a trench isolation structure comprising the steps of forming a polysilicon hardmask **206** over a substrate **202**, etching a trench **210** in the substrate, filling the trench with an insulative material **216a**, forming transistor devices **230** over the substrate, and constructing an interlevel dielectric layer **262** over the devices and having interconnects contacting the devices [column 2, lines 20-25].

Regarding claims 11 and 12, Witek *et al.* further discloses a pad oxide **204** with a thickness of 5 to 25 nm [column 6, line 16].

Regarding claims 13 and 14, Witek *et al.* further discloses a liner oxide **212** with a thickness of 10 to 50 nm [column 7, line 6].

Regarding claim 15, Witek *et al.* further discloses depositing the insulative material within the trench [Figure 8].

Regarding claim 16, Witek *et al.* further discloses a polysilicon hardmask with a thickness of 80 to 200 nm [column 6, line 22].

Regarding claim 18, Witek *et al.* further discloses a trench isolation structure [Figure 9].

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witek *et al.* in view of Gopalan *et al.*

Art Unit: 2891

Witek *et al.* teaches a trench with a depth of 0.3 to 0.7 μm [column 6, line 50], but does not discuss the width of the trenches. Gopalan *et al.* (US 6,794,269) teaches a trench width of 1 to 5 μm [column 7, line 42]. It would have been obvious to one of ordinary skill in the art to use the trench widths of Gopalan *et al.* in the method of Witek *et al.* since these widths provide reduced substrate capacitance of the circuit devices.

Conclusion

5. A copy of the EAST search history is enclosed.
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian Wilson whose telephone number is (571) 272-1886.

The examiner can normally be reached on weekdays, 7:30 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571) 272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christian Wilson, Ph.D.
Primary Examiner
Art Unit 2891

